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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,055	03/31/2004	Takashi Nakamura	251299US2	4869

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EXAMINER	
WILLIS, RANDAL L	

ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
06/05/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/813,055	NAKAMURA ET AL.	
	Examiner	Art Unit	
	Randal L. Willis	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,14-18,20,22 and 24-28* is/are rejected.

7)☒ Claim(s) *11-13,19,21 and 22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to application No. 10/813055 filed 3/31/2004. Claims 1-28 are pending and have been examined.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

3. Figures 8 and 29 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Allowable Subject Matter

4. Claims 11-13, 19, 21 and 23 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Katagiri (5,966,112).

Apropos claim 1, Katagiri teaches:

A display device (Title), comprising:

an array substrate having display elements (LCD 102, Fig 2) and output units configured to output binary image pickup data;

an image processing unit (108, Fig. 2) configured to have a bidirectional bus for a CPU (bidirectionaly connected to 105, Fig. 2); and

an LCDC (106,107 and 109, Fig. 2)which has a bidirectional bus for said CPU (bidirectionaly connected to 105, Fig. 2).

Apropos claim 2, Katagiri teaches:

The display device according to claim 1, wherein said LCDC has a receiving unit (107 holds display information, col 8 lines 59-60) configured to receive the output of an image pickup unit provided separate from said display device (receives external image signals Col 8 line 59-61).

Apropos claim 3, Katagiri teaches:

A display device, comprising:

an array substrate having display elements (LCD 102, Fig 2) and output units configured to output binary image pickup data;

an image processing unit (108, Fig. 2) configured to have a bidirectional bus for a CPU (bidirectionaly connected to 105, Fig. 2).

Apropos claim 4, Katagiri teaches:

The display device according to claim 3, wherein said LCDC has a receiving unit (107 holds display information, col 8 lines 59-60) configured to receive the output of an image pickup unit provided separate from said display device (receives external image signals Col 8 line 59-61).

7. Claim 5,20,22,24,26 rejected under 35 U.S.C. 102(b) as being anticipated by Ogawa (6,243,069).

Apropos claim 5, Ogawa teaches:

A display device, comprising:

display devices in pixels (pixel 14, Fig. 2) formed in vicinity of intersections of signal lines (22, Fig. 2) and scanning lines (23, Fig. 2) disposed in length and breadth;

image pickup units (photodiode 25, Fig 2), at least one of said image pickup units being provided corresponding to each pixel (See Fig. 2 one photodiode 25 per pixel 14), and each conducting image pickup at a prescribed range;

binary data storages (Line memory 36, Fig. 2) which store binary data corresponding to results of image picked up by said image pickup unit (Col 12 lines 23-25); and

an array substrate which outputs the binary data in multiple pixels that do not neighbor to each other in at least one direction of length or breadth direction (See Fig. 6 and Col 17 line 39-44).

Apropos claim 20, Ogawa teaches:

A display device, comprising:

display devices in pixels (pixel 14, Fig. 2) formed in vicinity of intersections of signal lines (22, Fig. 2) and scanning lines (23, Fig. 2) disposed in length and breadth;

image pickup units (photodiode 25, Fig 2), at least one of said image pickup units being provided corresponding to each pixel (See Fig. 2 one photodiode 25 per pixel 14), and each conducting image pickup at a prescribed range;

binary data storages (Line memory 36, Fig. 2) which store binary data corresponding to results of image picked up by said image pickup unit (Col 12 lines 23-25); and

a multiple gradation data generator which generates multiple gradation data with first, second third colors based on the binary data with the first, second and third colors picked up by said image pickup unit (Image data is obtained for each color; Abstract lines 12-15); and
a color composition unit configured to generate image pickup data with a fourth color based on the multiple gradation data with the first, second and third colors (Since Ogawa captures RGB data, it's inherint that the image formed will obtain white data).

Apropos claim 22, Ogawa teaches:

The display device according to claim 20, wherein said color composition unit generates the image pickup data with red, green and blue colors components based on the multiple gradation data with the first, second and third colors (Abstract lines 12-15).

Apropos claim 24, Ogawa teaches:

The display device according to claim 20, further comprising a backlight (18 Fig. 1) device capable of alternately illuminating the lights with the first, second and third colors (Abstract lines 8-10), said backlight device being disposed on back face of an insulation substrate on which said display elements and said image pickup units are provided (See Fig. 1, backlight 18 disposed behind glass 12 of display), wherein said image pickup unit repeatedly conducts image pickup with respect to the first, second and third colors of said backlight device (Abstract lines 12-15).

Apropos claim 26, Ogawa teaches:

The display device according to claim 20, wherein each pixel is substantially square shape (Pixels shown in Fig. 3 are substantially square).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa in view of Yanof (2004/0085458) and Makinouchi (2004/0204060).

Apropos claim 6, Ogawa teaches:

A display device, comprising:

a pixel array unit having display elements (pixel 14, Fig. 2) formed in vicinity of intersections of signal lines (22, Fig. 2) and scanning lines (23,

Fig. 2) disposed in length and breadth, image pickup units (photodiode 25, Fig 2) and an output unit which outputs binary data corresponding to image picked up by said image pickup unit (A/D converter 36, Fig. 2);

However Ogawa fails to explicitly teach:

a first image processing unit configured to generate multiple gradation data based on multiple binary data picked up by said image pickup units based on multiple image pickup conditions ; and

a second image processing unit configured to receive either the image pickup data picked up by said image pickup device or the multiple gradation data generated by said first image processing unit, to conduct a prescribed image processing.

In the same field of image capturing Yanof teaches a digital imaging system that first processes gradation data in an Automatic exposure control circuit (132 Fig. 1 [0025]). Yanof also teaches other processes that receive the image picked up by the digital imaging device as performs further processing such as color interpolation or gamma correction (140 and 144, Fig. 1).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to supply image processing units to generate gradation data and gamma correct etc as taught by Yanof in the image capture device of Ogawa in order to capture higher quality images ([0013]).

Ogawa and Yanof both fail to explicitly teach:

a image pickup device provided separate from said image pickup unit;

In the same field of devices with liquid crystal displays, Makinouchi teaches a cellular phone that has a camera and a liquid crystal display [0019].

Therefore it would have been obvious at the time of the invention to use the liquid crystal display as taught by Ogawa in the cellular phone taught by Makinouchi in order to provide a communications device that can take facial images and still provide high density document scanning.

Apropos claim 7, Yanof further teaches:

The display device according to claim 6, wherein said second image processing unit conducts at least one of gradation correction, color correction (color interpolation 140, Fig. 1), defective pixel correction, edge correction and noise correction.

Apropos claim 8, Ogawa and Yanof teach:

The display device according to claim 6, wherein said pixel array unit is formed on an insulation substrate using TFTs (Thin Film Transistors) (glass 12, Fig. 4 with TFT's 27, Fig. 4 and 5); and

said first image processing unit is a semiconductor chip (processing units on silicon chip [0024]).

Apropos claim 9, Ogawa teaches:

The display device according to claim 8, further comprising a display controller IC which embeds said first image processing unit and supplies digital pixel data for said pixel array unit to said pixel array unit (Control 71, Fig. 2 and Col 10 line 65-68).

Apropos claim 10, Ogawa further teaches:

The display device according to claim 6, wherein said image pickup unit arranged to a direction that the signal lines align is disposed in zigzag form for each pixel (Col 19 lines 42-45).

11. Claims 14-16 and 27 rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa (6,243,069) in view of Choi (6,791,520).

Apropos claim 14, Ogawa teaches:

A display device, comprising:

display devices in pixels (pixel 14, Fig. 2) formed in vicinity of intersections of signal lines (22, Fig. 2) and scanning lines (23, Fig. 2) disposed in length and breadth;

image pickup units (photodiode 25, Fig 2), at least one of said image pickup units being provided corresponding to each pixel (See Fig. 2 one photodiode 25 per pixel 14), and each conducting image pickup at a prescribed range;

binary data storages (Line memory 36, Fig. 2) which store binary data corresponding to results of image picked up by said image pickup unit (Col 12 lines 23-25); and

However Ogawa fails to explicitly teach:

an averaging gradation estimation unit configured to estimate an averaging gradation of whole display screen based on the binary data of the pixels connected to a portion of the scanning lines which do not neighbor to each other.

In the same field of Liquid crystal displays, Choi teaches a method of measuring designated points across a display surface and calculating the average luminance thereof (Col 6 lines 13-15).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have an average luminance estimation unit as taught by Choi in the liquid crystal display device of Ogawa in order to detect

image sticking defects and luminance change ratios of the display (Col 5 line 54-55).

Apropos claim 15, Choi further teaches:

The display device according to claim 14, wherein said averaging gradation estimation unit estimates the averaging gradation of the whole display screen based on the results of the image picked up by said image pickup unit corresponding to a portion of the signal lines which do not neighbor to each other (Choi measures a plurality of points to determine luminance as shown in Fig. 7 these points do not neighbor one another).

Apropos claim 16, Choi further teaches:

The display device according to claim 14, wherein said averaging gradation estimation unit estimates the averaging gradation of the whole display screen based on the binary data of the pixels connected to the scanning lines disposed for every m pieces (m is an integer not less than 2) and the signal lines disposed for every n pieces (n is an integer not less than 2). (luminance detect areas shown in Fig. 7 appear to be arranged such that every mth scan line and nth signal line is detected)

Apropos claim 27, Ogawa fails to explicitly teach:

The display device according to claim 20, further comprising an averaging gradation estimation unit configured to estimate the averaging gradation of the whole display screen based on the binary data of the pixel data connected to a portion of the scanning lines which do not neighbor to each other and a portion of the signal lines which do not neighbor to each other.

In the same field of Liquid crystal displays, Choi teaches a method of measuring designated points across a display surface and calculating the average luminance thereof (Col 6 lines 13-15).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have an average luminance estimation unit as taught by Choi in the liquid crystal display device of Ogawa in order to detect image sticking defects and luminance change ratios of the display (Col 5 line 54-55).

12. Claim 17 and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa and Choi as applied to claim 14 above, and further in view of Yanof.

Apropos claim 17, Ogawa fails to explicitly teach:
The display device according to claim 14, further comprising;

a signal processing output circuit which converts the binary data for multiple pixels into serial data and outputs the serial data; and

an output determination unit configured to determine whether or not to output the image pickup data of the remaining image pickup unit from said signal processing output circuit, based on the estimation result of said averaging gradation estimation unit.

In the same field of image capture devices, Yanof teaches correcting the exposure control of a image capture device in order to obtain a better picture, the picture received is not further processed till the exposure is within acceptable levels (See Fig. 2, process loops till no more corrections of exposure are required). Yanof also teaches that storage media are for image capture devises are in serial format (such as through a USB, [0028])

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have a deterimation unit to only allow the final picture to be rendered if the exposure was deemed acceptialbe as taught by Yanof in the image capture device of Ogawa in order to improve image quality. Also, it would have been obvious to provide a processing circuit that converts the image data into serial data in order to allow the images captured to be stored or shared via USB link, etc.

Apropos claim 18, Yanof further teaches:

The display device according to claim 17, wherein said image pickup unit newly conducts image pickup while changing image pickup conditions when determined that said output determination unit does not output the image pickup data of said image pickup unit (exposure values adjusted till image is at desired level, Fig. 2).

13. Claim 25 and 28 rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa in view of Yanof.

Apropos claim 25, Ogawa teaches:

The display device according to claim 20,

said image pickup unit repeatedly picks up image with respect to the cases where illumination color of said backlight are the first, second and third colors (Abstract lines 8-10).

However Ogawa fails to explicitly teach:

wherein said image pickup unit repeatedly picks up the image on multiple image pickup conditions with respect to the first, second and third colors of said backlight device;

In the same field of image capture devices, Yanof teaches a method of repeatedly capturing an image while varying exposure control till exposure is within an acceptable level (Fig. 2).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to perform repeated image captures for exposure control as taught by Yanof, on each of the color images captured by Ogawa in order to improve image quality.

Apropos claim 28, Ogawa fails to explicitly teach:
The display device according to claim 20, further comprising;

a signal processing output circuit which converts the binary data for multiple pixels into serial data and outputs the serial data; and

an output determination unit configured to determine whether or not to output the image pickup data of the remaining image pickup unit from said signal processing output circuit, based on the estimation result of said averaging gradation estimation unit.

In the same field of image capture devices, Yanof teaches correcting the exposure control of a image capture device in order to obtain a better picture, the picture received is not further processed till the exposure is within acceptable levels (See Fig. 2, process loops till no more corrections of

exposure are required). Yanof also teaches that storage media are for image capture devises are in serial format (such as through a USB, [0028])

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have a determination unit to only allow the final picture to be rendered if the exposure was deemed acceptable as taught by Yanof in the image capture device of Ogawa in order to improve image quality. Also, it would have been obvious to provide a processing circuit that converts the image data into serial data in order to allow the images captured to be stored or shared via USB link, etc.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randal L. Willis whose telephone number is (571) 270-1461. The examiner can normally be reached on Monday to Friday from 7:30am to 5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RLW

AMR A. AWAD
SUPERVISORY PATENT EXAMINER